1. **CURRENT RISKS (Region 6, with supplement from OLEM)**. What chemical(s) were involved in the overnight explosion at the Arkema plant in Crosby, and how toxic are the resulting air releases?

   The Arkema facility response is currently addressing nine (9) containers that have been loaded with 38,000 pounds of organic peroxide that needs refrigeration. Also, there is a warehouse with approximately 1,000,000 lbs of a different peroxide that does not need refrigeration. The Region 6 aerial reconnaissance plane conducted monitoring for a plume at the release site at 7:30 am CST. The aircraft is capable of measuring 78 different chemicals, including peroxides. This data will be available to unified command for release assessment. In addition, an EPA On-Scene Coordinator (OSC) and Technical Assistance Contract Team are meeting up with the Harris County Hazardous Material Team at the site and will integrate into unified command at the scene. The EPA Team will conduct air monitoring for peroxide and sulfur dioxide.

   EPA and TCEQ are providing direct support to Michael Sims, Incident Commander, Crosby Volunteer Fire Department and Chief Bob Royall, of the Harris County Fire Marshal's Office who are leading a coordinated local, state and federal effort as part of the Unified Command to control the fire at the Arkema facility in Crosby, Texas."

   As with all smoke, people can limit the potential for adverse health effects by limiting their exposure. This includes staying indoors with doors and windows closed and running the air conditioning (if possible) with the fresh intake closed. If it is absolutely necessary to be outdoors, try to move out of the plume of smoke and minimize heavy work, exercise, or children's playtime.

   Everyone in the area to follow the safety instruction of local authorities, specifically avoiding smoke and flood waters.

   Floodwaters may contain many hazards, including bacteria and other disease agents. Precautions should be taken by anyone involved in cleanup activities or any others who may be exposed to flood waters. These precautions include heeding all warnings from local and state authorities regarding boil water notices, swimming advisories, or other safety advisories. In addition to the drowning hazards of wading, swimming, or driving in swift floodwaters, these waters can carry large objects that are not always readily visible that can cause injuries to those in the water. Other potential hazards include downed power lines and possible injuries inflicted by animals displaced by the floodwaters.

2. **FUTURE RISKS (Region 6).** What do we know about what chemical(s) are at future risk of explosion? Check all available data sources.

   Potential estimate for the burning tank containing organic peroxides is approximately 38 hours of continued burning. The fire may cause the other nearby 8 similar tanks with similar products to ignite and/or explode.

Arkema is a Risk Management Plan (RMP) facility. It manufactures liquid organic peroxides and two substances, sulfur dioxide (anhydrous) and 2-methylpropene are present above the minimum threshold quantity for RMP applicability. The current RMP reports that the facility stores 66,260 pounds of sulfur dioxide and 85,256 pounds of 2-methylpropene. There have been no accidental off-site releases of applicable RMP chemicals from the facility in the previous five years.

Sulfur dioxide is a highly toxic and reactive chemical. In its anhydrous form, it is stored as a pressurized liquid (i.e., liquefied under pressure). At standard conditions, it forms a dense toxic gas cloud with a pungent odor. Its NIOSH Immediately Dangerous to Life and Health (IDLH) value is 100 ppm. If this chemical is released from its containment, it could migrate offsite and cause injuries to surrounding populations and the environment.

2-methylpropene is an extremely flammable gas. It is normally stored in bulk as a pressurized liquid (i.e., liquefied under pressure). At standard conditions, it forms a gaseous vapor cloud and will ignite if vapors in the flammable range reach an ignition source. Releases could result in vapor cloud explosions with resulting blast effects, or large flash fires or pool fires.

a. Where on-site are those chemicals – how many containers, how close, etic.

The company stores chemicals throughout the facility. 8 containers with peroxides are located in close proximity to each other.

b. What could happen to those chemicals (fire, explosion, etc), and what are the dangers? Explain.

Additional explosions and fires are possible. The facility warehouse is reported by facility representatives to contain up to 1 million pounds of dry organic peroxide (in addition to the material contained in the refrigerated containers). Facility representatives believe these additional materials will not be endangered by the ongoing fire.

3. **NEXT STEPS WE CAN TAKE (Region 6 and OLEM jointly, and discussion by all**) What can we do to prepare against these future risks?

a. Monitoring. What are ASPECT's capabilities? Are they enough, or do we need to order Arkema to monitor?
   See attached ASPECT report
b. Preparedness. Beside evacuation, what technical steps can we do to prevent an explosion?
c. Response. What assets can be pre-positioned, including what can we order Arkema to pre-position?

The peroxide in the containers is too unstable for entry into the plant. The EPA team will not likely be able to access the site until all 9 containers have burned or exploded and floodwaters have receded. This is expected to occur over the next several days. Once the remaining 8 containers have burned or exploded, the EPA Team will monitor the air at the site to determine when contaminant levels in the air have dropped to acceptable levels for first responders to initiate

entry and assessment activities in and around the plant. Assessment of safety will include measurement of contaminant levels in soil and spills and the integrity of the warehouse. The Team will remain in Unified Command around the clock until such time as the situation is stabilized and local authorities determine the facility no longer poses a threat to the surrounding community and can be reopened.